

REMARKS

Applicants thank the Examiner for the indication of allowable subject matter in claims 8 – 11.

New claim 17 presents the subject matter of claim 8 in independent form. Claim 8 is cancelled.

Claims 12 – 15 are cancelled without prejudice or disclaimer.

The rejection of claims 1 and 5 under 35 USC 102(b) over Krikorian et al., US Patent 5,100,486, is respectfully traversed. As indicated in the Office Action, Krikorian et al. discloses a coating on a metallic surface comprising a flux and a metal coating material composed of one or more metals, metal alloys, or mixtures of the same. However, Krikorian et al. does not disclose a surface layer that includes a ceramic layer as required by the claimed invention.

At Col. 3, lines 32 – 56, Krikorian et al. discloses a slurry mixture containing one or more halogenated flux agents and a metal coating material comprising one or more metals or metal alloys. However, Krikorian does not indicate that the flux or the metal coating material participates in the formation of a ceramic layer. Instead Krikorian et al. states that the flux agent causes cleaning of the surface layer when heat is applied. (Col 3, lines 9 – 17) All of the layers Krikorian discloses at Col. 3, lines 9 – 56, are metal layers or metal alloy layers. None of the layers described at Col. 3, lines 9 – 56 constitutes a ceramic layer.

Krikorian does discuss the formation of an oxide layer as an outer surface layer, for example, at Col. 6, lines 27 – 36 or at Col. 9, lines 47 – 51. The oxide layer described by Krikorian is a surface oxidation layer formed during exposure

of the metal coating surface to an oxidizing atmosphere at high temperature. Surface passivation oxides such as the ones discussed in Krikorian et al., however, are not generally understood to constitute a 'ceramic' material, as these passivation oxides typically have poor structural properties and typically have incomplete, sub-oxide stoichiometries. Krikorian et al. acknowledges this by referring to the aluminum oxide formed in Example 1 as " Al_2O_3 scale". As a result, Krikorian does not disclose a surface layer that includes a ceramic layer, as required by claims 1 and 5. Thus, the rejection of claims 1 and 5 over Krikorian et al. is improper, as Krikorian et al. fails to disclose each and every element of the claimed invention. Reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1 – 7 and 16 under 35 USC 103(a) over Claussen et al., US Patent 6,051,277, in view of Willermet et al., US Patent 5,309,874, is respectfully traversed. The Examiner has failed to establish a prima facie case of obviousness in this rejection. As an initial matter, it is not readily apparent how one of skill in the art would operably combine Claussen et al. with Willermet et al. However, even if Claussen et al. were somehow combined with Willermet et al., the resulting structure would not disclose or suggest the claimed invention.

Claussen et al. discloses an oxide-containing (ceramic) preform that is treated with molten Al or a molten Al-alloy. This leads to the formation of intermetallic layers that are bonded to or permeate the preform. However, as acknowledged by the Examiner, Claussen et al. fails to disclose metallic substrate element, as required by the claimed invention.

The disclosure of Willermet et al. does not remedy the shortcomings of Claussen et al. Willermet et al. discloses the formation of ceramic layers on various metal substrates by chemical or physical vapor deposition. It is not clear how the vapor deposition techniques of Willermet et al. could be combined in any way with the molten aluminum synthesis technique of Claussen et al. In spite of this, the Examiner asserts that one of skill in the art would be motivated to combine Claussen et al. with the metal substrates of Willermet et al. based merely on the desirability of the combination. However, the Examiner has failed to address how the resulting combination would disclose or suggest all of the elements of the claimed invention. In particular, no indication is given of how a combination of Claussen et al. with Willermet et al. would lead to the formation of transition layer to the substrate element that is composed of intermetallic phases comprising the metal of the substrate element and the metal of the ceramic layer.

As noted above, the method disclosed in Claussen leads to the formation of intermetallic phases that are bonded to the preform, which is a ceramic. Claussen et al. provides no teaching of forming intermetallic phases that serve as a transition layer to a metallic substrate element. Willermet et al. does not discuss the formation of intermetallic phases at all. Thus, neither Claussen et al. nor Willermet et al., either alone or in combination, discloses or suggests the formation of a transition layer to the substrate element comprising intermetallic phases. As a result, reconsideration and withdrawal of this rejection are respectfully requested.

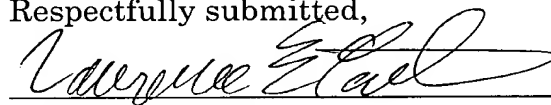
In view of the foregoing amendments and remarks, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #095309.50220US).

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Respectfully submitted,



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